**FACT SHEET**
**REISSUANCE OF A GENERAL VPDES PERMIT**
**TO DISCHARGE TO STATE WATERS AND STATE**
**CERTIFICATION UNDER THE STATE WATER CONTROL LAW**

The State Water Control Board ("Board") has under consideration the reissuance of a general VPDES permit for domestic sewage discharges with a design flow of less than or equal to 1,000 gallons per day on a monthly average basis . This general permit will replace VAG40 which expires August 1, 2006. Owners covered under the expiring general permit, who wish to continue to discharge under a general permit, must register for coverage under the new general permit.

Permit Number: VAG40

Name of Permittee: Any owner of a domestic sewage discharge with a design flow of less than or equal to 1,000 gallons per day on a monthly average basis in the Commonwealth of Virginia agreeing to be regulated under the terms of this general permit.

Facility Location: Commonwealth of Virginia

Receiving Waters: All surface waters within the boundaries of the Commonwealth of Virginia, except those waters specifically named in other Board regulations or policies which prohibit such discharges.

On the basis of preliminary review and application of lawful standards and regulations, the Board proposes to reissue the general permit subject to certain conditions and has prepared a draft permit. The Board has determined that this category of discharges is appropriately controlled under a general permit. The category of discharges to be included involves facilities with the same or similar types of operations and which discharge the same or similar types of wastewater. The draft general permit requires that all covered facilities meet the same effluent limitations, conditions and monitoring requirements.

Persons may comment in writing on the proposed permit action within 60 days from May 16, 2005. Comments should be addressed to the contact person listed below. Comments shall include the name, address, and telephone number of the writer, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered by the Board.

All pertinent information is on file and may be inspected, and copied by contacting Burton R. Tuxford at:

Virginia Department of Environmental Quality
P.O. Box 10009
Richmond, Virginia 23240-0009
Tel: (804) 698-4086
Fax: (804) 698-4032
email: brtuxford@deq.virginia.gov

A public hearing on this draft permit will be held on June 9, 2005 at 10:00 a.m. at the DEQ Piedmont Regional Office in Glen Allen, Virginia. Notice of the public hearing will be published in Richmond Time-Dispatch and in the Virginia Register. Following the public comment period, the Board will make its determinations regarding the proposed permit action.

**Proposed Effluent Limitations and Monitoring Requirements (all apply to final effluent unless indicated otherwise)**

Subcategory I - Discharges to receiving waters where the 7Q10 flows are less than 0.2 million gallons per day (MGD)

| Parameter | Limitation |
|---|---|
| $BOD_5$ | 30 mg/l max. |
| Total Suspended Solids | 30 mg/l max. |
| pH | 6.0 min. - 9.0 max. |
| Total Residual Chlorine* | |
| After contact tank | 1.0 mg/l min. |
| Final effluent | 0.016 mg/l max. |
| E. coli** | 235/100ml max. |
| enterococci*** | 104/100ml max. |
| Dissolved Oxygen | 5.0 mg/l min. |
| Fecal Coliform**** | 200/100ml max. |

Subcategory II - Discharges to receiving waters where the 7Q10 flows are equal to or greater than 0.2 MGD.

| Parameter | Limitation |
|---|---|
| $BOD_5$ | 30 mg/l max. |
| Total Suspended Solids | 30 mg/l max. |
| pH | 6.0 min. - 9.0 max. |
| Total Residual Chlorine* | 1.0 mg/l min. |
| | 2.0 mg/l max. |
| E. coli** | 235/100ml max. |
| enterococci*** | 104/100ml max. |
| Fecal Coliform**** | 200/100ml max. |

* Applies only when chlorine is used for disinfection and the discharge is in freshwater.
** Applies only when methods other than chlorine are used for disinfection and the discharge is in freshwater.
*** Applies only when the discharge is in saltwater or transition zone, regardless of the disinfection methods.
**** Applies only when the discharge is in shellfish water.

Monitoring is required annually by grab sample. Reporting is not required; however, the monitoring results shall be made available to the Department of Environmental Quality (DEQ) or Virginia Department of Health personnel upon request.

The quantification level for chlorine shall be 0.1 mg/l.

Except for bacteria, all limitations are written using two significant figures, in accordance with Guidance Memo #03-2008, dated April 10, 2003.

## Basis for Proposed Effluent Limitations and Monitoring Requirements

Flow shall be estimated each time effluent samples are taken. The design flow of the treatment works must be less than or equal to 1,000 gallons per day on a monthly average basis.

The general permit recognizes two subcategories within this discharge category. Subcategory I includes discharges to receiving waters where the 7Q10 flows are less than 0.2 MGD. The 7Q10 flow is the mean stream flow over 7 consecutive days which, on a statistical basis, can be expected to occur once every 10 years. These receiving waters provide low to moderate dilution of effluent discharges. Subcategory II includes discharges to waters where the 7Q10 flows are equal to or greater than 0.2 MGD. Discharges in this subcategory receive ample dilution.

The effluent limitations for $BOD_5$, TSS, and pH in both subcategories are based on federal requirements for secondary treatment (40 CFR Part 133). $BOD_5$ and TSS concentrations of 30 mg/l are listed as 30-day averages in the federal regulation, but because of the annual sampling frequency here proposed, they are applied as instantaneous maximums in the general permit. These effluent concentrations are consistently achievable through proper operation and maintenance of treatment works typically installed to treat very small domestic sewage flows. The treatment works installed by the owners whose discharges are covered under this general permit are also expected to attain no less than 85 percent removal of the 30-day average influent $BOD_5$ and total suspended solids as anticipated by the federal requirements for secondary treatment (40 CFR Part 133).

The discharge from these treatment works is usually intermittent and varies according to the water use pattern in the home or business being served. The flow of 1,000 gallons per day is less than 1 gallon per minute on a continuous basis. When it stops and starts it roughly equates to a 5-gallon bucket of water every 7 minutes or a large trash can (45 gallons) every hour. Most treatment works of this type actually discharge in the range of 500 to 600 gallons per day. When they discharge, the effluent may infiltrate into the soil immediately below the discharge point or it may persist in the receiving water course for a very short distance, typically less than 100 yards, except during wet weather. The validity of modeling the water quality impacts of discharges under these conditions is very suspect. The basic assumptions under which the economically feasible water quality models were formulated cannot be applied to these discharges. Steady state models are not applicable to a situation where the stream and/or the discharge are intermittent. When the receiving stream is of sufficient size to make water quality modeling a reasonable undertaking, a 1,000 gallon per day discharge is diluted by the stream to the point that meaningful results for parameters like $BOD_5$ are difficult to measure. The DEQ has no records of fish kills, water quality standards violations, pollution events or other significant environmental harm caused by small ($\leq$1,000 gpd) individual dischargers. Therefore, the general permit is drafted with secondary treatment limits for $BOD_5$ and TSS which are believed to provide adequate water quality protection. In the low to moderate dilution situations of Subcategory I, a minimum dissolved oxygen limitation of 5.0 mg/l is also included to reduce the potential for oxygen depletion in the receiving waters.

The general permit also imposes limitations to assure adequate disinfection of the wastewater prior to discharge. The general permit has been revised to reflect recent changes in the Water Quality Standards (9 VAC 25-260) regarding new bacteria standards and disinfection policy. The DEQ has already analyzed sufficient data to determine that chlorine limitations that were adequate to meet fecal coliform limits will also maintain E. coli criteria. However, this is not applicable to discharges into saltwater and transition zones where enterococci criteria are applicable. Because of the annual sampling frequency here proposed, the single sample maximum limits of E. coli and enterococci are incorporated into the general permit.

These chlorine limitations vary according to subcategory. For discharges in Subcategory I, there will be limited to moderate dilution of the wastewater from the treatment works and the limitations that deal with disinfection for human health protection are more stringent as a result. When chlorine is used for disinfection and the discharge is in

freshwater, the total residual chlorine limitation for final effluents is 0.016 mg/l, which is derived in accordance with current guidance on the development of limits for toxic pollutants (Guidance Memo #00-2011, dated August 24, 2000). A printout of the STATS program output is included at the end of this document. In order to assure adequate disinfection, the permit requires a minimum 1.0 mg/l chlorine residual at the end of the chlorine contact tank. This chlorine residual level is expected to reduce E. coli bacteria to at least an order of magnitude below the standard.

For discharges in Subcategory II, the chlorine limits are less stringent. The discharge of up to 1,000 gallons per day into a 7Q10 flow of 0.2 MGD (200,000 gallons per day) receiving stream represents at least a 200:1 dilution ratio. It is unlikely that residual chlorine from a small domestic sewage treatment works would be detectable after the stream flow and wastewater discharge mix. Even if the wastewater discharge contained the maximum chlorine limit of 2.0 mg/l, it would be diluted to 0.01 mg/l of chlorine under this scenario, well below the quantification level of 0.1 mg/l. In these cases, the general permit would not require dechlorination of the effluent. The dissolved oxygen limitation is unnecessary in this subcategory because any oxygen demand exerted by such a small wastewater discharge on a stream of 0.2 MGD or greater is un-measurable.

If disinfection is achieved by means other than chlorination, the permit imposes the E. coli limit for discharges into freshwater to assure compliance with the water quality standards. For discharges into saltwater and transition zone, the permit imposes the enterococci limit, regardless of the methods of disinfection used. For discharges into shellfish waters, in addition to the appropriate chlorine, E. coli or enterococci limits, the general permit will continue to limit fecal coliform with an effluent limit of 200/100 ml. Although the Water Quality Standards have been amended to remove the reference to this effluent limit in the shellfish waters, the Virginia Department of Health, Bureau of Shellfish Sanitation still uses fecal coliform as an indicator for determining the quality of shellfish waters and it is necessary to ensure discharges meet this level.

## Proposed Special Conditions and Their Basis

1. Restriction of floating solids and visible foam discharges.

This condition is required to comply with the general water quality standards (9 VAC 25-260-20).

2. Schedule of Compliance.

Treatment works that were existing as of their dates of coverage under this general permit must add unit processes or be otherwise physically modified in order to comply with the discharge limitations of the general permit are allowed a compliance period of 180 days from the date of permit coverage to complete the necessary modifications. A certification of completion of the modifications must be filed with the DEQ in order to verify compliance. New treatment works are expected to meet the permit requirements on the first day of coverage.

3. Maintenance Contract.

In order to ensure that the treatment works is properly operated and maintained, the general permit requires the permittee to obtain a maintenance contract, unless an exception to the maintenance contract has been requested and granted. For proposed treatment works, prior to start-up, the permittee must submit a copy of a valid maintenance contract, with a minimum of two years coverage, to the DEQ. For existing treatment works, the permittee shall maintain a maintenance contract throughout the permit term.

4. Operation and Maintenance Plan.

In lieu of obtaining a maintenance contract, the permittee may choose to submit an Operation and Maintenance Plan to the DEQ for review and approval. Should the permittee fail to implement the approved Operation and Maintenance Plan, or if violations of effluent limitations occur, the DEQ reserves the right to require the permittee to obtain a maintenance contract.

The general permit does not anticipate that the covered treatment works will be treating sewage from other users or indirect dischargers. Therefore, the permit contains no conditions applicable to such users.

## General Permit Coverage

The general permit will have a fixed term of five (5) years effective upon the Board's approval. Every authorization to discharge under this general permit will expire at the same time and all authorizations to discharge will be renewed on the same date, provided a complete registration statement has been filed prior to the general permit's expiration date.

All persons desiring to be covered by this general permit must register with the DEQ by filing a complete registration statement. The registration statement shall be submitted and a notification of coverage issued prior to any discharges occurring at the facility to be covered under the permit.

The DEQ will review existing individual permits for facilities with design flows of $\leq$1,000 gpd prior to the time the permits are scheduled to be reissued to determine the facility's eligibility for coverage under this general permit. Owners of all existing permitted discharge facilities that the DEQ believes are eligible for coverage under this permit will be notified by the DEQ of their eligibility for coverage prior to the time the individual permit is scheduled to be reissued. This notice will include a request that the owner submits a general permit registration statement. Any owner may request that an individual permit be issued by submitting an appropriate application or they may request coverage under the general permit by filing a registration statement. Upon receipt of a completed registration statement, the DEQ will determine if coverage under a general permit is appropriate. Consideration of regulatory requirements regarding anti-backsliding will occur prior to granting coverage under this general permit.

The general permit does not apply to any discharge that will result in significant impacts to state waters. The determination of no significant impact is made in accordance with the Board's Antidegradation Policy contained in the Water Quality Standard (9 VAC 25-260).

All facilities that the DEQ believes are eligible for coverage under this general permit will be authorized to discharge under the terms and conditions of the permit after a complete registration statement is submitted to the DEQ, the DEQ determines that coverage under the general permit is appropriate, and the DEQ sends a copy of the general permit to the applicant. If coverage under the general permit is inappropriate, the applicant will be so notified and will be requested to submit an application for an individual permit.

STATS Program Output

8/23/04 11:39:37 AM

Facility = Domestic sewage discharges of less than or equal to 1,000 gpd
Chemical = Total Residual Chlorine
Chronic averaging period = 4
WLAa = 0.019
WLAc = 0.011
Q.L. = 0.1
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

# observations = 1
Expected Value = .1
Variance = .0036
C.V. = 0.6
97th percentile daily values = .243341
97th percentile 4 day average = .166379
97th percentile 30 day average = .120605
# < Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 1.60883226245856E-02
Average Weekly limit = 1.60883226245856E-02
Average Monthly Limit = 1.60883226245856E-02

The data are:

0.1